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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,329	06/05/2001	Steven A. Morley	010327	7520

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
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EXAMINER	
RAO, ANAND SHASHIKANT	
ART UNIT	**PAPER NUMBER**
2613	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/875,329	MORLEY ET AL.	
	Examiner	Art Unit	
	Andy S. Rao	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-15,17-25,27-31 and 33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-15,17-25,27-31 and 33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-5, 7-15, 17-25, 27-31, and 33 as filed in the amendment of 9/25/04 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7-15, 17-25, 27-31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et at al., (hereinafter referred to as "Kim") in view of Thyagarajan et al., (hereinafter referred to as "Thyagarajan").

Kim discloses a method of decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 3B), the method comprising: dividing the digital image into a plurality of blocks (Kim: column 6, lines 32-65); and decimating the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 1. However, Kim fails to disclose utilizing an adaptive block size discrete cosine transforms (ABSDCT) and decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses the decimation of selected adaptively block sized discrete cosine transform blocks (Thyagarajan: column 4, lines 25-37 and 64-67; column 5, lines 1-17) of the digital images based on predetermined criteria

(Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's teaching for decimating of adaptively block sized discrete cosine transformed blocks based on predetermined criteria, into the Kim decimation method in order to prevent blocking artifacts and thus preserve features of blocks. The Kim method, now incorporating Thyagarajan's teaching for decimating of adaptively block sized discrete cosine transformed blocks based on predetermined criteria, has all of the features of claim 1.

Regarding claim 2, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria is a function of the chrominance information of the block (Thyagarajan: column 6, lines 50-55), as in the claim.

Regarding claim 3, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being contrast of the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 4, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being the level of detail in the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 5, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being a function of the desired bit rate (Thyagarajan: column 13, lines 55-68), as in the claim.

Regarding claim 7, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has separating the image into luminance and two chrominance signals (Kim: column 3, lines 35-40), as in the claim.

Kim discloses a method of decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 3B), the method comprising: dividing the digital image into a plurality of blocks (Kim: column 6, lines 32-65), wherein each block may be represented as a plurality of elements within a plurality of columns and rows, decimating further comprising: filtering each element of each column of the block (Kim: column 12, lines 10-60) and decimating the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 1. However, Kim fails to disclose filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25%; and decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses the filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% (Thyagarajan: column 7, lines 30-67; column 8, lines 1-20) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, into the Kim decimation method in order to prevent blocking artifacts and thus preserve features of

blocks. The Kim method, now incorporating Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, has all of the features of claim 8.

Regarding claim 9, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has filtering the elements of the plurality blocks along the columns (Kim: column 12, lines 8-61), as in the claim.

Regarding claims 10, the Kim method, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has pixel to frequency and frequency to pixel conversion (Kim: column 3, lines 25-50), as in the claim.

Kim discloses a apparatus for decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 2A), the apparatus comprising: means for dividing the digital image into a plurality of blocks (Kim: column 6, lines 32-65); means for decimating the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 11. However, Kim fails to disclose means for dividing utilizing an adaptive block size discrete cosine transforms (ABSDCT) and means for decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses an apparatus for the decimation of selected adaptively block sized discrete cosine transform blocks (Thyagarajan: column 4, lines 25-37 and 64-67; column 5, lines 1-17) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50)) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary

skill in the art to incorporate Thyagarajan's means for decimating of adaptively block sized discrete cosine transformed blocks based on predetermined criteria, into the Kim decimation apparatus in order to prevent blocking artifacts and thus preserve features of blocks. The Kim apparatus, now incorporating Thyagarajan's means for decimating of adaptively block sized discrete cosine transformed blocks based on predetermined criteria, has all of the features of claim 11.

Regarding claim 12, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria is a function of the chrominance information of the block (Thyagarajan: column 6, lines 50-55), as in the claim.

Regarding claim 13, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being contrast of the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 14, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being the level of detail in the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 15, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being a function of the desired bit rate (Thyagarajan: column 13, lines 55-68), as in the claim.

Regarding claim 17, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has separating the image into luminance and two chrominance signals (Kim: column 3, lines 35-40), as in the claim.

Kim discloses an apparatus of decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 3B), comprising: means for dividing the digital image into a plurality of blocks (Kim: column 6, lines 32-65), wherein each block may be represented as a plurality of elements within a plurality of columns and rows, decimating further comprising: filtering each element of each column of the block (Kim: column 12, lines 10-60) and decimating the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 1. However, Kim fails to disclose filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25%; and decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses the filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% (Thyagarajan: column 7, lines 30-67; column 8, lines 1-20) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, into the Kim decimating apparatus in order to prevent blocking artifacts and thus preserve features of blocks. The Kim apparatus, now incorporating Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the

current column 50%, and the next column 25% based on predetermined criteria, has all of the features of claim 18.

Regarding claim 19, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has filtering the elements of the plurality blocks along the columns (Kim: column 12, lines 8-61), as in the claim.

Regarding claims 20, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has pixel to frequency and frequency to pixel conversion (Kim: column 3, lines 25-50), as in the claim.

Kim discloses a apparatus for decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 2A), the apparatus comprising: a divider configured to divide the digital image into a plurality of blocks (Kim: column 6, lines 32-65); a decimator configured to decimate the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 21. However, Kim fails to disclose a divider configured to divide a digital image utilizing an adaptive block size discrete cosine transforms (ABSDCT) and a decimator configured to , selectively decimate certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses an apparatus for the decimation of selected adaptively block sized discrete cosine transform blocks (Thyagarajan: column 4, lines 25-37 and 64-67; column 5, lines 1-17) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50)) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's decimator configured to decimate adaptively block sized discrete cosine

transformed blocks based on predetermined criteria, into the Kim decimation apparatus in order to prevent blocking artifacts and thus preserve features of blocks. The Kim apparatus, now incorporating Thyagarajan's decimator configured to decimate of adaptively block sized discrete cosine transformed blocks based on predetermined criteria, has all of the features of claim 21.

Regarding claim 22, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria is a function of the chrominance information of the block (Thyagarajan: column 6, lines 50-55), as in the claim.

Regarding claim 23, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being contrast of the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 24, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being the level of detail in the block (Thyagarajan: column 7, lines 1-15), as in the claim.

Regarding claim 25, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the predetermined criteria being a function of the desired bit rate (Thyagarajan: column 13, lines 55-68), as in the claim.

Regarding claim 26, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has the dividing using adaptive block size DCT operations (Kim: column 10, lines 20-55), as in the claim.

Regarding claim 27, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has separating the image into luminance and two chrominance signals (Kim: column 3, lines 35-40), as in the claim.

Kim discloses an apparatus of decimation of a digital image, the digital image represented by a plurality of pixels (Kim: figure 3B), comprising: a divider configured to divide the digital image into a plurality of blocks (Kim: column 6, lines 32-65), wherein each block may be represented as a plurality of elements within a plurality of columns and rows, a decimator configured to decimate the blocks further comprising: filtering each element of each column of the block (Kim: column 12, lines 10-60) and decimating the blocks (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 1. However, Kim fails to disclose filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25%; and decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses the filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% (Thyagarajan: column 7, lines 30-67; column 8, lines 1-20) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, into the Kim decimating apparatus in order to prevent blocking artifacts and thus preserve features of blocks. The Kim apparatus, now incorporating Thyagarajan's teaching for filtering each element of each column of the block, where given a

column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, has all of the features of claim 28.

Regarding claim 29, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has filtering the elements of the plurality blocks along the columns (Kim: column 12, lines 8-61), as in the claim.

Regarding claims 30, the Kim apparatus, now incorporating Thyagarajan's selective decimation as based predetermined criteria, has pixel to frequency and frequency to pixel conversion (Kim: column 3, lines 25-50), as in the claim.

Kim discloses a method of converting a digital image of a first format to a digital image of a second format (Kim: column 12, lines 63-65), the digital image represented by a plurality of pixels (Kim: figure 3B), the method comprising: dividing the digital image into a plurality of blocks (Kim: column 6, lines 32-65), wherein each block may be represented by a plurality of columns, each column comprising a plurality of elements (Kim: column 12, lines 9-40); and filtering each column of the block (Kim: column 12, lines 60-67; column 13, lines 1-10), as in claim 31. However, Kim fails to disclose selectively filtering certain ones of the blocks based upon predetermined criteria for 4:4:4 to 4:2:2 to 4:2:0 conversion, as in the claim. Thyagarajan discloses the filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% (Thyagarajan: column 7, lines 30-67; column 8, lines 1-20) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teaching, it would have been obvious

for one of ordinary skill in the art to incorporate Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, into the Kim decimation method in order to prevent blocking artifacts and thus preserve features of blocks. The Kim method, now incorporating Thyagarajan's teaching for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, has all of the features of claim 31.

Kim discloses a method of converting a digital image of a first format to a digital image of a second format (Kim: column 12, lines 63-65), the digital image represented by a plurality of pixels (Kim: figure 3B), the method comprising: separating the digital image into Y, Cr, Cb components (Kim: column 3, lines 35-40); dividing the Cb, Cr components into a plurality of blocks (Kim: column 6, lines 32-65) utilizing an adaptive block size discrete cosine transforms (Kim: column 10, lines 10-50), wherein each block may be represented by a plurality of columns, each column comprising a plurality of elements (Kim: column 12, lines 9-40); and filtering each column of the block (Kim: column 12, lines 60-67; column 13, lines 1-10), including weighting the columns (Kim: column 12, lines 20-40), as specified in claim 33. However, Kim fails to disclose utilizing an adaptive block size discrete cosine transforms (ABSDCT) and filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25%; and decimating, selectively, certain ones of the blocks based upon predetermined criteria. Thyagarajan discloses the decimation of selected adaptively block sized discrete cosine

transform blocks (Thyagarajan: column 4, lines 25-37 and 64-67; column 5, lines 1-17) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) and the filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% (Thyagarajan: column 7, lines 30-67; column 8, lines 1-20) of the digital images based on predetermined criteria (Thyagarajan: column 5, lines 35-67; column 6, lines 1-50) in order to preserve features of blocks by preventing the blocking effect (Thyagarajan: column 4, lines 20-30), as in the claim. Accordingly, given the Thyagarajan teachings, it would have been obvious for one of ordinary skill in the art to incorporate Thyagarajan's teachings for utilizing an adaptive block size discrete cosine transforms (ABSDCT) and filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, into the Kim decimation method in order to prevent blocking artifacts and thus preserve features of blocks. The Kim method, now incorporating Thyagarajan's teachings for utilizing an adaptive block size discrete cosine transforms (ABSDCT) and for filtering each element of each column of the block, where given a column, weighting the previous column 25%, the current column 50%, and the next column 25% based on predetermined criteria, has all of the features of claim 33.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (703)-305-4813. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris S. Kelley can be reached on (703)-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andy S. Rao
Primary Examiner
Art Unit 2613

asr
January 23, 2005

ANDY RAO
PRIMARY EXAMINER